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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/406,868	09/28/1999	KIWAMU KOBAYASHI	1232-4573	2019

7590 06/07/2004

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EXAMINER	
ANYASO, UCHENDU O	

ART UNIT	PAPER NUMBER
2675	20

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/406,868	KOBAYASHI, KIWAMU
	Examiner	Art Unit
	Uchendu O Anyaso	2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-83,85-90 and 92-94* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *80-83,85-90 and 92-94* is/are allowed.

6)☐ Claim(s) *1-33, 35-46, 48-79* is/are rejected.

7)☒ Claim(s) *34 and 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. **Claims 1-83, 85-90** and **92-94** are pending in this action.

Claim Rejections - 35 USC ' 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 2, 4, 11, 12, 14, 21-23, 25, 35, 36, 38, 48-54, 56, 64-69, 71** and **79** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hall et al* (U.S. Patent 5,703,623) in view of *Shouen* (U.S. 5,619,231), and further in view of *Balakrishnan* (U.S. 6,115,028).

Regarding **independent claims 1, 11** and **21**, and for **claims 4** and **14**, *Hall* teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse adapted for use as a cursor or object control device (column 4, lines 3-6) for interactive systems which provides X, Y and Z axis signal processed output (column 5, lines 34-48).

Furthermore, *Hall* teaches a designation means having a light emission device for designating a three-dimensional position by teaching a high intensity infrared light emitting diode (4) (hereinafter: LED1) mounted under a card 1' such that LED1 acts as the link between the device and a receiver mounted in a computer (column 6, lines 62-67 through column 7, line 1, figure 2 at 1', 4).

Furthermore, *Hall* teaches a pair of Hall-effect sensors (6) and a pair of piezoelectric sensors (9) which provide the primary yaw, pitch and roll angular detection and bearing sensing capability of the device wherein microprocessor (8) interprets the individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

However, *Hall* does not teach how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device. On the other hand, Shouen teaches this concept by teaching the position and operation of a multi-dimensional e.g., three-dimensional (see Abstract) mouse body 1 on an optical reflection plate 6 wherein the position of the light-emitting and detecting unit 17e of the multi-dimensional mouse body 1 corresponds to the mouse cursor position a1 (xa, za) on the display, and the position of the light-emitting and detecting unit 17f corresponds to the mouse cursor position b1 (xb, zb) on the display such that when the multi-dimensional mouse body 1 is rotated and moved, <u>the positions of the light-emitting and detecting units 17e and 17f are moved to the coordinate points a2 (xa', za') and b2 (xb', zb')</u>, respectively (*see* column 6, lines 38-53, figure 4b at 1, 17e, 17f; *see generally* column 6, lines 30-57, figure 4a, 4b). <u>The movement amounts of the light-emitting and detecting unit 17e are then **computed** as (xa-xa') and (za-za'), respectively</u> (column 6, lines 50-53, 4b).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall and Shouen's inventions because while Hall teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse

having a light emission device for designating a three-dimensional position, a pair of Hall-effect sensors (6), and piezoelectric sensors, Shouen teaches how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b). The motivation for combining these inventions would have been to provide a multi-dimensional coordinate input apparatus which can carry out, in a simple manner, the inputting of coordinates on each plane in the multi-dimensional space, and the inputting of a rotational angle or inclination of each plane (column 1, lines 59-63).

However, neither Hall nor Shouen teach a means for inputting an <u>absolute</u> three-dimensional position in three-dimensional coordinates. On the other hand, Balakrishnan teaches this concept by teaching an invention that is directed to a system for inputting three-dimensional (3-D) coordinates for a three-dimensional model (column 1, lines 5-15) wherein <u>**absolute position control** is provided as one of the possible mappings</u> (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110; column 3, lines 63 through column 4, lines 11).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall, Shouen and Balakrishnan's inventions while the combination of Hall and Shouen teach how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b), Balakrishnan teaches a means for inputting an <u>absolute</u> three-dimensional position in three-dimensional coordinates (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110;

column 3, lines 63 through column 4, lines 11). The motivation for combining these inventions would have been to provide a system that allows the ease of use and position control of a mouse but does not require the need for the separate actions to control the third dimension as in the mouse (column 2, lines 20-24).

Regarding independent **claims 22, 35** and **48,** and for **claims 25** and **38,** *Hall* teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse adapted for use as a cursor or object control device (column 4, lines 3-6) for interactive systems which provides X, Y and Z axis signal processed output (column 5, lines 34-48).

Furthermore, *Hall* teaches a designation means having a light emission device for designating a three-dimensional position by teaching a high intensity infrared light emitting diode (4) (hereinafter: LED1) mounted under a card 1' such that LED1 acts as the link between the device and a receiver mounted in a computer (column 6, lines 62-67 through column 7, line 1, figure 2 at 1', 4).

Furthermore, *Hall* teaches a pair of Hall-effect sensors (6) and a pair of piezoelectric sensors (9) which provide the primary yaw, pitch and roll angular detection and bearing sensing capability of the device wherein microprocessor (8) interprets the individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

Also, *Hall* teaches a <u>photoreception device</u> by teaching a high intensity light emitting diode 4 (LED1) which acts as the link between the device and a receiver mounted in the

interactive control unit, TV or computer (column 6, lines 62-67 *through* column 7, line 1, figure 2 at 4).

Furthermore, *Hall* teaches a calculation means by teaching piezoelectric sensors that when used in conjunction with Hall-Effect sensors, calculates the angular vector and allows translational and rotational orientation information to be accurately discerned (column 9, lines 21-29).

Furthermore, *Hall* teaches how to synchronize light from the light emitting device and the LED1 by teaching a microprocessor (8) that interprets the individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

However, *Hall* does not teach how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device. On the other hand, Shouen teaches this concept by teaching the position and operation of a multi-dimensional e.g., three-dimensional (see Abstract) mouse body 1 on an optical reflection plate 6 wherein the position of the light-emitting and detecting unit 17e of the multi-dimensional mouse body 1 corresponds to the mouse cursor position a1 (xa, za) on the display, and the position of the light-emitting and detecting unit 17f corresponds to the mouse cursor position b1 (xb, zb) on the display such that when the multi-dimensional mouse body 1 is rotated and moved, <u>the positions of the light-emitting and detecting units 17e and 17f are moved to the coordinate points a2 (xa', za') and b2 (xb', zb')</u>, respectively (*see* column 6, lines 38-53, figure 4b at 1, 17e, 17f; *see generally* column 6, lines 30-57, figure 4a, 4b). <u>The movement amounts of the light-</u>

emitting and detecting unit 17e are then **computed** as (xa-xa') and (za-za'), respectively (column 6, lines 50-53, 4b).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall and Shouen's inventions because while Hall teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse having a light emission device for designating a three-dimensional position, a pair of Hall-effect sensors (6), and piezoelectric sensors, Shouen teaches how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b). The motivation for combining these inventions would have been to provide a multi-dimensional coordinate input apparatus which can carry out, in a simple manner, the inputting of coordinates on each plane in the multi-dimensional space, and the inputting of a rotational angle or inclination of each plane (column 1, lines 59-63).

However, neither Hall nor Shouen teach a means for inputting an absolute three-dimensional position in three-dimensional coordinates. On the other hand, Balakrishnan teaches this concept by teaching an invention that is directed to a system for inputting three-dimensional (3-D) coordinates for a three-dimensional model (column 1, lines 5-15) wherein **absolute position control** is provided as one of the possible mappings (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110; column 3, lines 63 through column 4, lines 11).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall, Shouen and Balakrishnan's inventions while the combination of Hall and Shouen teach how to

calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b), Balakrishnan teaches a means for inputting an absolute three-dimensional position in three-dimensional coordinates (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110; column 3, lines 63 through column 4, lines 11). The motivation for combining these inventions would have been to provide a system that allows the ease of use and position control of a mouse but does not require the need for the separate actions to control the third dimension as in the mouse (column 2, lines 20-24).

Regarding independent **claims 49, 64** and **79,** and for **claims 50-53, 56 and 65-68** and **71**, *Hall* teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse adapted for use as a cursor or object control device (column 4, lines 3-6) for interactive systems which provides X, Y and Z axis signal processed output (column 5, lines 34-48).

Furthermore, *Hall* teaches a designation means having a light emission device for designating a three-dimensional position by teaching a high intensity infrared light emitting diode (4) (hereinafter: LED1) mounted under a card 1' such that LED1 acts as the link between the device and a receiver mounted in a computer (column 6, lines 62-67 through column 7, line 1, figure 2 at 1', 4).

Furthermore, *Hall* teaches a pair of Hall-effect sensors (6) and a pair of piezoelectric sensors (9) which provide the primary yaw, pitch and roll angular detection and bearing sensing

capability of the device wherein microprocessor (8) interprets the individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

Also, *Hall* teaches a photoreception device by teaching a high intensity light emitting diode 4 (LED1) which acts as the link between the device and a receiver mounted in the interactive control unit, TV or computer (column 6, lines 62-67 *through* column 7, line 1, figure 2 at 4).

Furthermore, *Hall* teaches a <u>binarization means</u> for binarizing an output signal by teaching an A/D conversion means (85) that enables the input device to achieve position and orientation sensing which contain device output parameters (column 10, lines 58-66).

Furthermore, *Hall* teaches a calculation means by teaching piezoelectric sensors that when used in conjunction with Hall-Effect sensors, calculates the angular vector and allows translational and rotational orientation information to be accurately discerned (column 9, lines 21-29).

Furthermore, *Hall* teaches how to synchronize light from the light emitting device and the LED1 by teaching a microprocessor (8) that interprets the individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

However, *Hall* does not teach how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device. On the other hand, Shouen teaches this concept by teaching the position and operation of a multi-

dimensional e.g., three-dimensional (see Abstract) mouse body 1 on an optical reflection plate 6 wherein the position of the light-emitting and detecting unit 17e of the multi-dimensional mouse body 1 corresponds to the mouse cursor position a1 (xa, za) on the display, and the position of the light-emitting and detecting unit 17f corresponds to the mouse cursor position b1 (xb, zb) on the display such that when the multi-dimensional mouse body 1 is rotated and moved, the positions of the light-emitting and detecting units 17e and 17f are moved to the coordinate points a2 (xa', za') and b2 (xb', zb'), respectively (*see* column 6, lines 38-53, figure 4b at 1, 17e, 17f; *see generally* column 6, lines 30-57, figure 4a, 4b). The movement amounts of the light-emitting and detecting unit 17e are then **computed** as (xa-xa') and (za-za'), respectively (column 6, lines 50-53, 4b).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall and Shouen's inventions because while Hall teaches an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse having a light emission device for designating a three-dimensional position, a pair of Hall-effect sensors (6), and piezoelectric sensors, Shouen teaches how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b). The motivation for combining these inventions would have been to provide a multi-dimensional coordinate input apparatus which can carry out, in a simple manner, the inputting of coordinates on each plane in the multi-dimensional space, and the inputting of a rotational angle or inclination of each plane (column 1, lines 59-63).

However, neither Hall nor Shouen teach a means for inputting an absolute three-dimensional position in three-dimensional coordinates. On the other hand, Balakrishnan teaches this concept by teaching an invention that is directed to a system for inputting three-dimensional (3-D) coordinates for a three-dimensional model (column 1, lines 5-15) wherein **absolute position control** is provided as one of the possible mappings (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110; column 3, lines 63 through column 4, lines 11).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Hall, Shouen and Balakrishnan's inventions while the combination of Hall and Shouen teach how to calculate and determine the three-dimensional position in three-dimensional coordinates of a position based on a positional relationship between a position of the designation means and a position of the coordinate input device (*see generally* column 6, lines 30-57, figure 4a, 4b), Balakrishnan teaches a means for inputting an absolute three-dimensional position in three-dimensional coordinates (column 8, lines 22-37; column 7, lines 41-50, figure 8 at 108, 110; column 3, lines 63 through column 4, lines 11). The motivation for combining these inventions would have been to provide a system that allows the ease of use and position control of a mouse but does not require the need for the separate actions to control the third dimension as in the mouse (column 2, lines 20-24).

Regarding **claims 2, 12, 23, 36, 54** and **69,** in further discussion of claims 1, 11, 22, 35, 49 and 64, *Hall* teaches a plurality of line sensors by teaching a pair of Hall-effect sensors (6) and a pair of piezoelectric sensors (9) which provide the primary yaw, pitch and roll angular detection and bearing sensing capability of the device wherein microprocessor (8) interprets the

individual signals from the sensors and the button and relays the control signals to the receiver via infrared LED1 (4) (column 7, lines 3-23, figure 2 at 4, 6, 8, 9).

4. **Claims 3, 5-10, 13, 15-20, 24, 26-33, 37, 39-46, 55, 57-63, 70** and **72-78** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hall et al* (U.S. Patent 5,703,623) in view of *Shouen* (U.S. 5,619,231), and further in view of *Balakrishnan* (U.S. 6,115,028), as in claims 1, 11, 22, 35, 49 and 64 above, and further in view of *Isoguchi et al* (U.S. 5,146,353).

Regarding **claims 3, 5-10, 13, 15-20, 24, 26-30, 37 39-43, 55, 57-61, 70** and **72-76**, in further discussion of claims 1, 11, 22, 35, 49 and 64, *Hall, Shouen* and *Balakrishnan* do not teach a shutter which is turned on and off. On the other hand, *Isoguchi* teaches a shutter of CCD (35) located in the design of a video camera (1) and a remote control switch box (14) such that the CCD (35) opens so that a photographic object can be photographed and electric charge can be accumulated at each pixel (column 7, lines 25-36). This enables a recording gate to be tuned on synchronously with so that charge accumulated in the CCD (35) may be processed (column 7, lines 25-36).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Hall, Shouen, Balakrishnan* and *Isoguchi* because while the combination of *Hall, Shouen* and *Balakrishnan* teach an invention that relates to the field of position and orientation-sensing devices embedded into a handheld remote pointer or mouse adapted for use as a cursor or object control device (column 4, lines 3-6), *Isoguchi* teaches a shutter of CCD (35) located in the design of a video camera (1) and a remote control switch box (14) such that a recording gate may be tuned on synchronously with so that charge accumulated in the CCD (35) may be processed (column 7, lines 25-36). The motivation for combining these inventions would have been to

provide a means by which an image data may be recorded and played back in an electronic device (column 1, lines 38-46).

Regarding **claims 31, 44, 62 and 77**, in further discussion of claims 26, 39, 57 and 72, *Isoguchi* teaches how CCD (35) opens so that a photographic object can be photographed and electric charge can be accumulated at each pixel (column 7, lines 25-36). This enables a recording gate to be tuned on synchronously with so that charge accumulated in the CCD (35) may be processed (column 7, lines 25-36).

Regarding **claims 32, 33, 45, 46, 63** and **78**, in further discussion of claims 24, 37, 55 and 70, *Hall* teaches in FIG. 7 a functional block diagram illustrating the overall operation of sensing circuit for a remote control device wherein signals from the Hall-Effect 14 and piezoelectric 15 sensors or the <u>pressure-sensitive button switch 16</u> are transmitted to the onboard processor 17 (column 7, lines 55-60, figure 7).

Allowable Subject Matter

5. Claims **80-83, 85-90** and **92-94** are allowed.

6. **Claims 34** and **47,** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's amendments and arguments filed December 22, 2003 have been fully considered but they are moot in view of the new ground(s) of rejection.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,512,920 to *Gibson* for a locator device for control of graphical objects.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, 6th Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Uchendu O. Anyaso

05/26/2004

CHANH NGUYEN
PRIMARY EXAMINER